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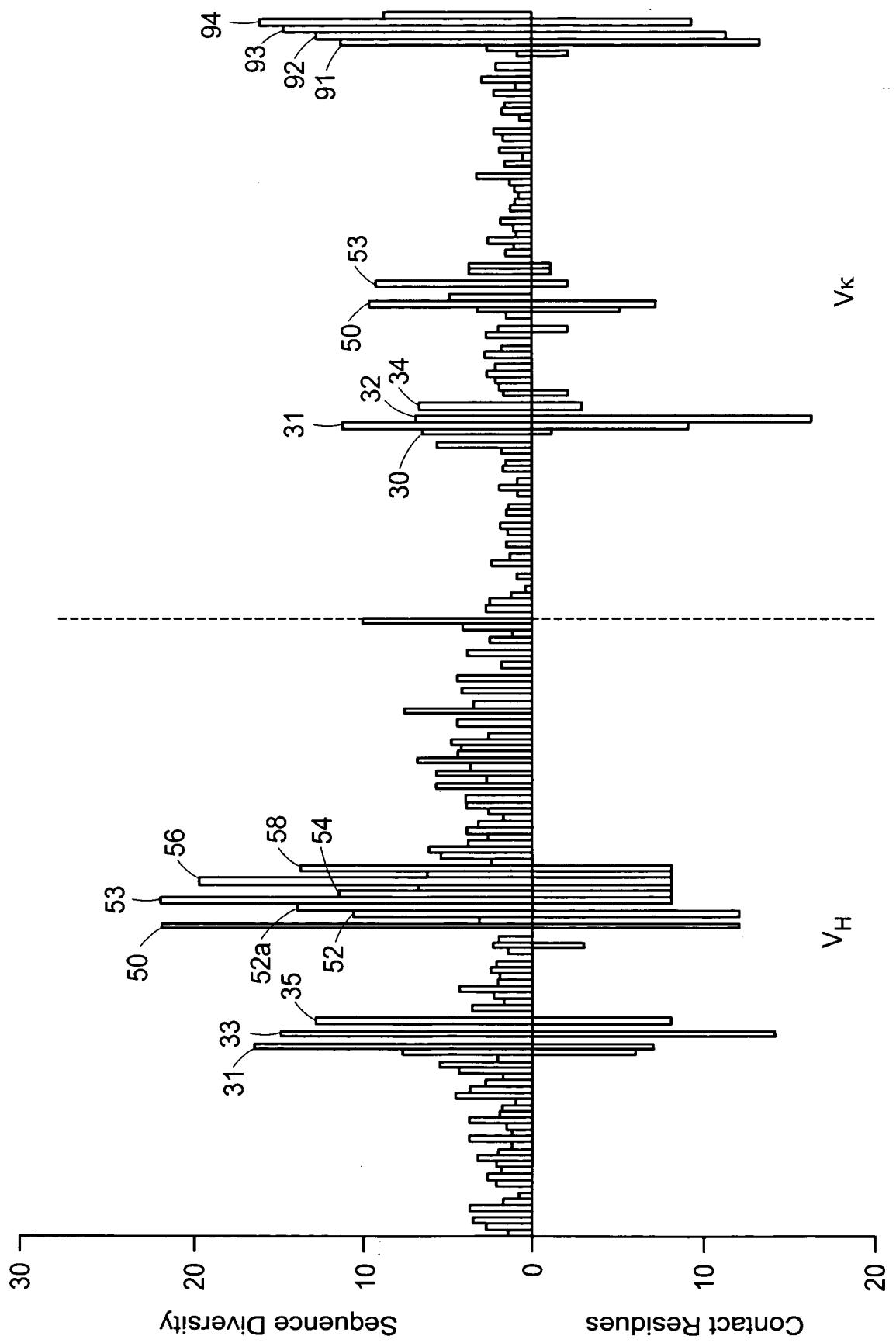


FIG. 1



FIG. 2A

FIG. 2B

FIG. 2A

S Y A M S W V R Q A P G K G L E W V S A I S G S G G S T Y Y
AGC TAT GCC ATG AGC TGG GTC CGC CAG GCT CCA GGG AAG GGG CTG GAG TGG GTC TCA GCT ATT AGT GGT AGT GCT GGT AGC ACA TAC TAC
HCDR1 HCDR2

H60	A	D	S	V	K	G	R	F	T	I	S	R	D	N	S	K	N	T	L	Y	L	Q	M	N	S	L	R	A	E	D
GCA	GAC	TCC	GTC	AAG	GGG	TTG	ACC	ATC	ATC	AAT	TCC	GAC	GAA	ATG	CTG	CAA	ATG	AAC	ACG	CTG	TAT	CTG	AGA	AGC	CTG	AGA	GCC	GAG	GAC	

H90	H98 H100	H110	H113
T A V Y Y C A K S Y G A F D Y W G Q G T L V T V S S G G G G	TGG GGC CAG GCA ACC CTG GTC ACC <u>GTC TCG</u> GGT GGA GGC GGT		Xhot
ACG GCC GTA TAT TAC TGT GCG AAA <u>AGT TAT GGT GCT TTT GAC TAC</u>			
			HCDR3



S G G G G S G G G G S T D I Q M T Q S P S S L S A S V G D R
 TCA GGC GGA GGT GGC AGC GGC GGT GGC GGG TCG TCG GAC ATC CAG ATG ACC CAG TCT CCA TCC TCC CTG TCT GCA TCT GTA GGA GAC AGA
 Sal I

L1
 V T I T C R A S Q S I S S Y I L N W Y Q Q K P G K A P K L L I
 GTC ACC ATC ACT TGC CGG GCA AGC ATT AGC AGC ATT TTA AAT TGG TAT CAG CAG AAA CCA GGG AAA GCC CCT AAG CTC CTC CTG ATC
 LCDR1

L20
 Y A A S S L Q S G V P S R F S G S G S G T D F T L T I S S L
 TAT GCT GCA TCC AGT TTG CAA AGT GGG GTC CCA TCA AGG TTC AGT GGC AGT GGA TCT GGG ACA GAT TTC ACT CTC ACC ATC AGC AGT CTG
 LCDR2

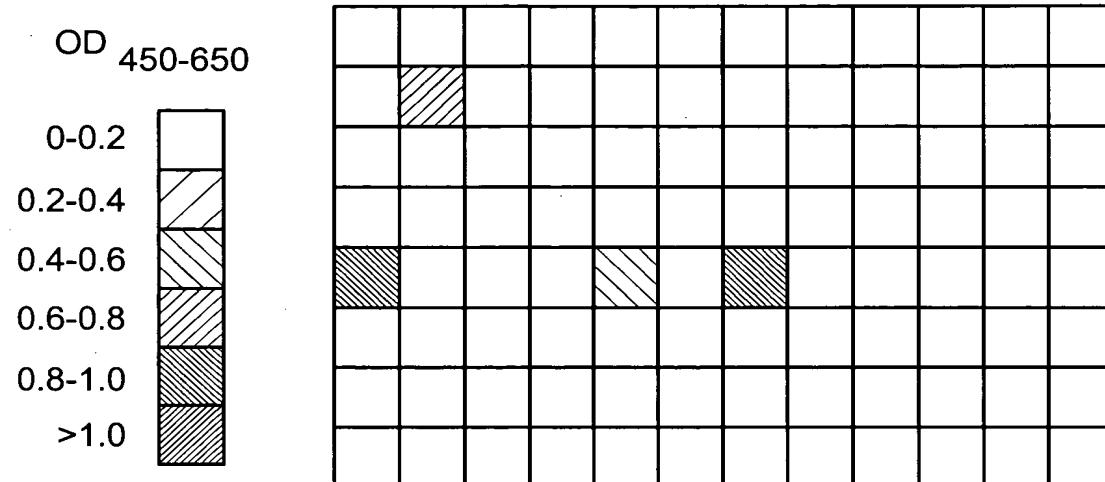
L30
 L40
 L50
 L60
 L70
 L80
 L90
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 Q P E D F A T Y Y C Q Q S Y S T P N T F G Q G T K V E I K R
 CAA CCT GAA GAT TTT GCA ACT TAC TAC TGT CAA CAG AGT TAC AGT ACC CCT AAT AGT TTC GGC CAA GGG ACC AAG GTG GAA ATC AAA CGG
 LCDR3

- Diversified in "Primary" library only
- Diversified in "Somatic" library only
- Diversified in "Primary" and "Somatic" libraries

FIG. 2B

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"Primary" NNK library before pre-selection



"Primary" NNK library after pre-selection

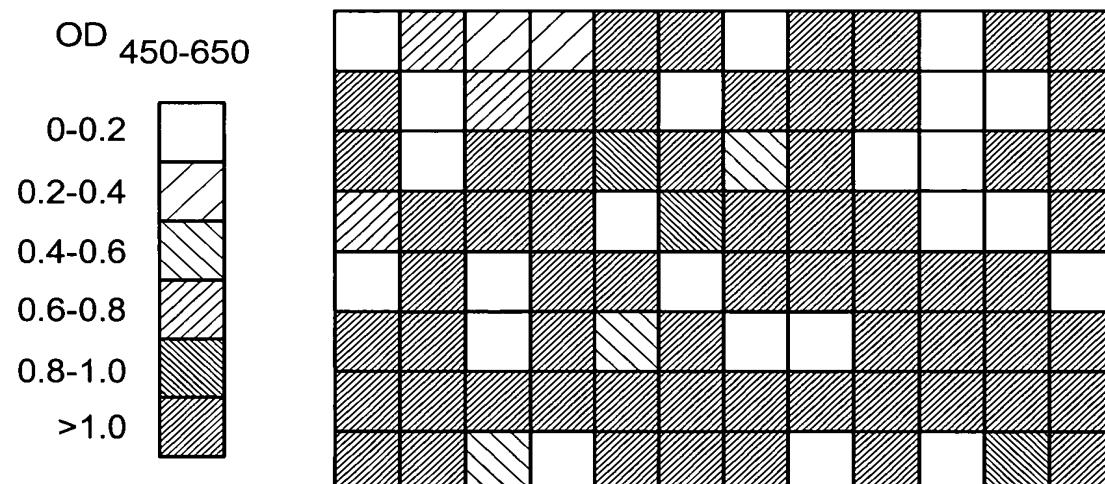


FIG. 3

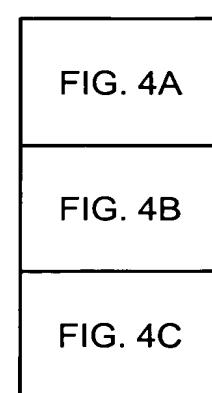


FIG. 4



Clones	Antigen	Heavy chain (framework DP-47)			Light chain (framework DPK9)			No*
		Library	CDR1	CDR2	CDR3	CDR1	CDR2	
UBIA 1-9	Bovine ubiquitin MNK	Primary	SYAMS	<u>IIGSEGWPTIYADSVKG</u>	<u>GGSMF</u> DY	RASQSISSYLN	<u>RASSL</u> QS	QQSNTPYT 9
UBIB 1,3-10	"	Somatic MNK	<u>AYAMT</u>	AISGGGGSTYYADSVKG	<u>KASSF</u> DY	RASQSISSYLN	<u>AASSL</u> QS	QQSNTPST 9
BIPA1-3,6,9	RatBIP	Primary MNK	SYAMS	<u>LI</u> <u>SPL</u> <u>GKD</u> <u>TSYADSVKG</u>	<u>RAGI</u> <u>F</u> DY	RASQSISSYLN	<u>HASR</u> <u>LQ</u> S	QQR L <u>RPL</u> T 5
BIPA4	"	"	SYAMS	<u>GIRRVGQATSYADSVKG</u>	<u>GGRL</u> <u>F</u> DY	RASQSISSYLN	<u>YASH</u> <u>LQ</u> S	QQLLD P V _T 1
BIPA5,7,9	"	"	SYAMS	<u>AINTKGMTTDYADSVKG</u>	<u>GSOA</u> <u>F</u> DY	RASQSISSYLN	<u>QASE</u> <u>LQ</u> S	QG G YNK P R _T 3
BIPB1-4,6-10	"	Somatic MNK	<u>NYQMH</u>	AISGGGGSTYYADSVKG	<u>GTRR</u> <u>F</u> DY	RASQSISSYLN	<u>AASSL</u> QS	QQSNTPVT 9
HISA 1,2,7-8	Bovine	Primary MNK	SYAMS	<u>AISPKGRRTYYADSVKG</u>	<u>RDKL</u> <u>F</u> DY	RASQSISSYLN	<u>EAST</u> <u>LQ</u> S	QE E KM V <u>P</u> _L T 4
Histone								
HISA 6	"	"	SYAMS	<u>RITPAGRRTYYADSVKG</u>	<u>PSPP</u> <u>F</u> DY	RASQSISSYLN	<u>HASL</u> <u>LQ</u> S	QG G OH R <u>P</u> _L T 1
HISA 3,9	"	"	SYAMS	<u>RITPAGHRTYYADSVKG</u>	<u>QVS</u> <u>R</u> FDY	-	-	-
HISA 10	"	"	SYAMS	<u>TISPQGLRTYYADSVKG</u>	<u>GRPR</u> <u>F</u> DY	-	-	2
HISA 4	"	"	SYAMS	<u>TISPKGRTTYADSVKG</u>	<u>TNRS</u> <u>F</u> DY	RASQSISSYLN	<u>RASR</u> <u>LQ</u> S	QRAKK P _T 1
HISB 1,3	"	Somatic MNK	<u>KYRME</u>	AISGGGGSTYYADSVKG	<u>GRWP</u> <u>F</u> DY	RASQSI N <u>ENL</u> S	<u>AASSL</u> QS	QQSNTPHT 2
HISB 6	"	"	<u>RYRMH</u>	AISGGGGSTYYADSVKG	<u>NEPR</u> <u>F</u> DY	RASQSIEMRLN	<u>AASSL</u> QS	QQSNTPST 1
HISB 2	"	"	<u>RYRMG</u>	AISGGGGSTYYADSVKG	<u>GYRK</u> <u>F</u> DY	RASQSISI L LN	<u>AASSL</u> QS	QQSNTPL _T 1
HISB 4,7,9	"	"	<u>RYRMG</u>	AISGGGGSTYYADSVKG	<u>GYRK</u> <u>F</u> DY	RASQSIGPF L S	<u>AASSL</u> QS	QQSNTPPT 3

FIG. 4A



HISB5, 8	"	"	<u>RYRMG</u>	AISGGGGSTYYADSVKG	<u>GYRKFDY</u>	RASQSI <u>RLTLN</u>	AASSLQS	QQSYSTPGT	2
NIPA2, 7, 10	NIP-BSA	PrimaryNNK	SYAMS	<u>RIPARGTVTHYADSVKG</u>	<u>GGLRFDY</u>	RASQSI <u>SYLN</u>	<u>HASALQS</u>	<u>QQSYRKPTT</u>	3
NIPA3	"	"	SYAMS	<u>GISHTGSNTRYADSVKG</u>	<u>RHKGFDY</u>	RASQSI <u>SYLN</u>	<u>RASLQS</u>	<u>QQGYRFPAT</u>	1
NIPA5, 6, 9	"	"	SYAMS	<u>RIAPEGGRTKYADSVKG</u>	<u>GRYWFDY</u>	RASQSI <u>SYLN</u>	<u>RASRQS</u>	<u>QQRNAPTT</u>	3
NIPA1, 8	"	"	SYAMS	<u>TISYLGEEKTRYADSVKG</u>	<u>SRRTFDY</u>	RASQSI <u>SYLN</u>	<u>KASTLQS</u>	<u>QQRSPPAT</u>	2
NIPB1	"	SomaticCNN	<u>RYGMH</u>	AISGGGGSTYYADSVKG	<u>RGLGFDY</u>	RASQSI <u>SYLN</u>	AASSLQS	QQSYSTPLT	1
NIPB2-4, 7	"	"	<u>SYRMV</u>	AISGGGGSTYYADSVKG	<u>RGMAFDY</u>	RASQSI <u>HSRLS</u>	AASSLQS	QQSYSTPLT	4
NIPB5, 6	"	"	<u>KYNNH</u>	AISGGGGSTYYADSVKG	<u>ARWRFDY</u>	RASQSI <u>SYLN</u>	AASSLQS	QQSYSTPLT	2
NIPB8	"	"	<u>RYRMH</u>	AISGGGGSTYYADSVKG	<u>TPRPFDY</u>	RASQSI <u>QMGQLS</u>	AASSLQS	QQSYSTPNT	1
NIPB9	"	"	<u>RYRMH</u>	AISGGGGSTYYADSVKG	<u>TPRPFDY</u>	RASQSI <u>SENLL</u>	AASSLQS	QQSYSTPLT	1
10CG1	FITC-BSA	PrimaryNNK	SYAMS	<u>TISPYGKQTRYADSVKG</u>	<u>KSQHFDY</u>	RASQSI <u>SYLN</u>	<u>AASRQS</u>	<u>QQRGGPPT</u>	1
10CG2	"	"	SYAMS	<u>TITPRGSLTSYADSVKG</u>	<u>TAPPFDY</u>	RASQSI <u>SYLN</u>	<u>RASRQS</u>	<u>QSQRKST</u>	1
10CG3	"	"	SYAMS	<u>GISAYGTVYYADSVKG</u>	<u>RRAGFDY</u>	RASQSI <u>SYLN</u>	<u>RASRQS</u>	<u>QPRHMPQT</u>	1
10CG5	"	"	SYAMS	<u>SITNSGLATAYADSVKG</u>	<u>RSFRFDY</u>	RASQSI <u>SYLN</u>	<u>HASRQS</u>	<u>QQRHTNPPT</u>	1
10CG6	"	"	SYAMS	<u>GITTRGQTTRYADSVKG</u>	<u>TYPKFDY</u>	RASQSI <u>SYLN</u>	<u>NASRQS</u>	<u>QQSKLSPVT</u>	1
10CG7	"	"	SYAMS	<u>TIPARGGHTKYADSVKG</u>	<u>SAKAFDY</u>	RASQSI <u>SYLN</u>	<u>QASNLS</u>	<u>QRSAGPLT</u>	1
10DH1	"	SomaticCNN	<u>MYRMG</u>	AISGGGGSTYYADSVKG	<u>RTFRFDY</u>	RASQSI <u>RSRLS</u>	AASSLQS	QQSYSTPRT	1
10DH2, 3	"	"	<u>SYAMT</u>	AISGGGGSTYYADSVKG	<u>KTGMFDY</u>	RASQSI <u>TRLR</u>	AASSLQS	QQSYSTPRT	2
11CG1	Human	PrimaryNNK	SYAMS	<u>AINRRGSATRYADSVKG</u>	<u>YLHTFDY</u>	RASQSI <u>SYLN</u>	<u>RASRQS</u>	<u>QHPGLRPGT</u>	1
11CG2, 3	"	"	SYAMS	<u>AINRRGSATRYADSVKG</u>	<u>YLHTFDY</u>	RASQSI <u>SYLN</u>	<u>AASLQS</u>	<u>QSDLPPST</u>	2
11DH2	"	SomaticCNN	<u>RYRMW</u>	AISGGGGSTYYADSVKG	<u>RPSTFDY</u>	RASQSI <u>AKNLs</u>	AASSLQS	<u>QSYSTPST</u>	1

FIG. 4B



11DH3	"	"	"	<u>RYRMW</u>	AISGGGGSTYYADSVKG	<u>RPSTF</u> DY	RASQSIKORLH	AASSLQS	QQSYSTPST	1
12CG1, 2	Human	thyroglobulin	Primary MNK	SYAMS	<u>SIAPAGRHTYYADSVKG</u>	<u>NIRF</u> DY	RASQISSYLN	SASRLQS	QQRAGTPVT	2
12CG3	"	"	"	SYAMS	<u>GITMTGRTTKYADSVKG</u>	<u>NISM</u> IFY	RASQISSYLN	QASRLQS	QQRVLRPPT	1
12DH1, 2, 3	"	Somatic MNK	<u>RYPMS</u>	AISGGGGSTYYADSVKG	<u>GFYAF</u> DY	<u>RASQSI</u> VRVL	<u>T</u>	AASSLQS	QQSYSTPHT	3
13CG1	BSA	Primary MNK	SYAMS	<u>TITASGPNTRYADSVKG</u>	<u>NHST</u> FDY	RASQISSYLN	<u>RASH</u> LOS	QQRNTAPRT		1
13CG2	"	Primary DVT	SYAMS	<u>TIYYAGSNTYYADSVKG</u>	<u>GYTF</u> DY	RASQISSYLN	<u>YASN</u> LQS	QQSDTSPPT		1
13CG3	"	Primary MNK	SYAMS	<u>MYPGGY-TKYADSVKG</u>	<u>NADLF</u> DY	RASQISSYLN	<u>TASR</u> LOS	QQMRRKPAT		1
13DH1	"	Somatic MNK	<u>LYNNV</u>	AISGGGGSTYYADSVKG	<u>EWSRF</u> DY	<u>RASQSI</u> KSLL	<u>AASS</u> LQS	QQSYSTPKT		1
13DH2	"	"	<u>GYYMS</u>	AISGGGGSTYYADSVKG	<u>THDS</u> FDY	<u>RASQSI</u> DRYLN	<u>AASS</u> LQS	QQSYSTPIT		1
13DH3	"	"	"	<u>RYQMV</u>	<u>HLSRF</u> DY	<u>RASQSI</u> KYNLA	<u>AASS</u> LQS	QQSYSTPRT		1
14CG1, 2, 3	Hen egg	Primary MNK	SYAMS	<u>EILPRGHRTAYADSVKG</u>	<u>SGKH</u> FDY	RASQISSYLN	<u>NAST</u> LQS	QQRKRLPET		3
14DH2, 3	"	Somatic MNK	<u>YEML</u>	AISGGGGSTYYADSVKG	<u>PFMS</u> FDY	<u>RASQSI</u> HDLY	<u>AASS</u> LQS	QQSYSTPRT		2
19CG1, 3	Mouse IgG	Primary DVT	SYAMS	<u>SIGSSGYGTGYADSVKG</u>	<u>GYYS</u> FDY	RASQISSYLN	<u>DASS</u> LQS	QQSDDSSPYT		2
19DH2	"	Somatic DVT	<u>DYDMS</u>	AISGGGGSTYYADSVKG	<u>DGAGF</u> DY	RASOSIGSSLS	<u>AASS</u> LQS	QQSYSTPNT		1
20CG1	Human IgG	Primary MNK	SYAMS	<u>AISGLGKQTRYADSVKG</u>	<u>GYSR</u> FDY	RASQISSYLN	<u>SASLL</u> LQS	QQLGTPPRT		1
20DH1	"	Somatic MNK	<u>RYEMS</u>	AISGGGGSTYYADSVKG	<u>SWTL</u> FDY	RASOSIFTNLD	<u>AASS</u> LQS	QQSYSTPPT		1
20DH2	"	"	<u>RYEMS</u>	AISGGGGSTYYADSVKG	<u>SWTL</u> FDY	<u>RASQSIGTLLR</u>	<u>AASS</u> LQS	QQSYSTPNT		1

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* of clone sequenced

FIG. 4C



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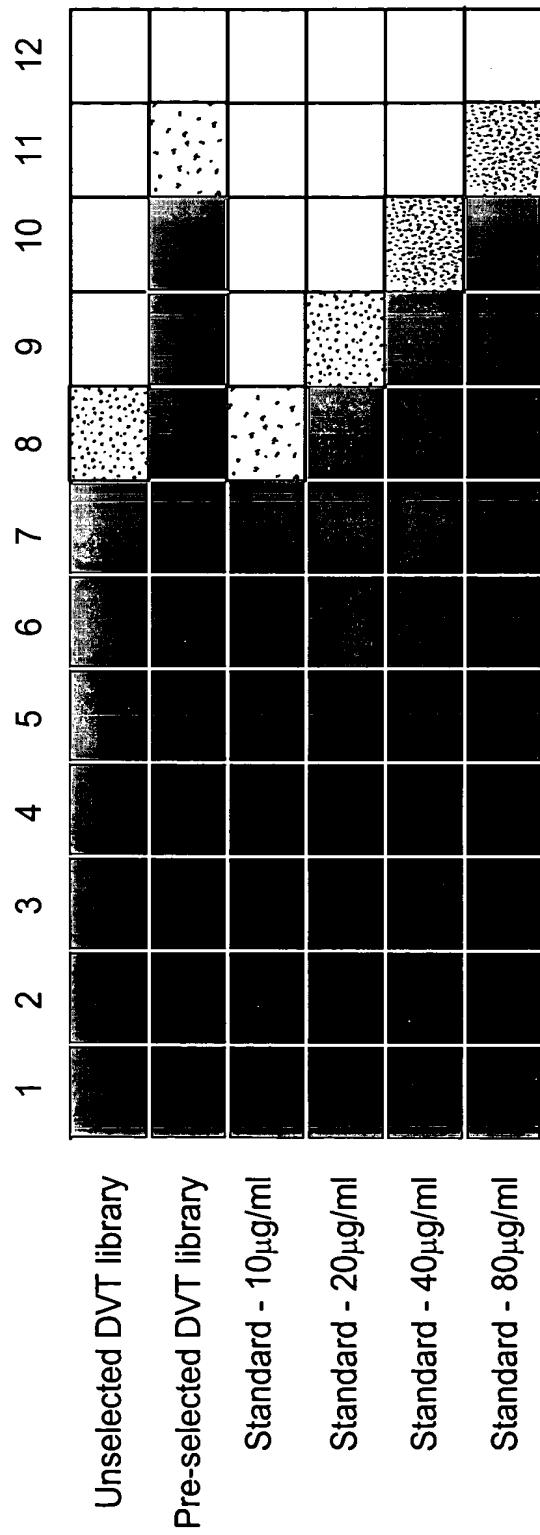


FIG. 5A

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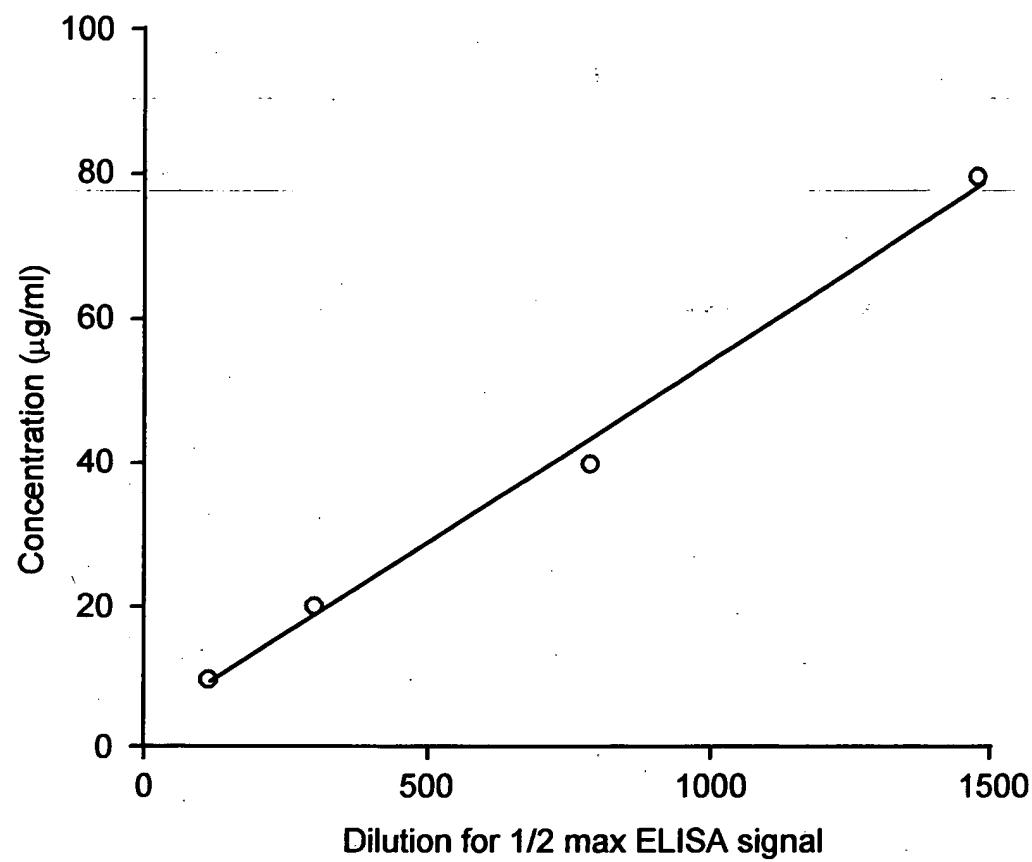


FIG. 5B

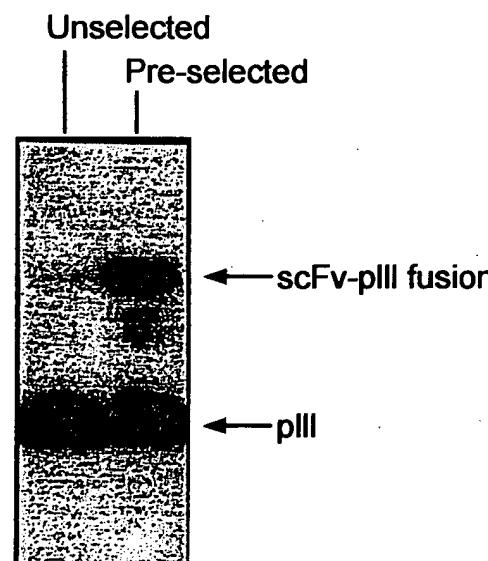


FIG. 6